ABSTRACT

DETECTING AND MAINTAINING LINEARITY IN A POWER AMPLIFIER SYSTEM THROUGH COMPARING PEAK AND RMS POWER LEVELS

Small portable communication devices that support multiple modulation techniques cannot gain the benefits of using an isolator at the output of a power amplifier to provide stability in the load impedance. However, for communication devices that include amplitude modulation schemes, maintaining linear operation of the power amplifier is still required. In the presence of unstable load impedance, this can be a difficult task. As a solution, the linearity of the power amplifier is detected by determining the peak power of the output signal and the average or root-mean-square of a portion of the output signal, such as a mid-amble). The ratio of the peak power and the average power of the output signal are used to determine if the power amplifier is operating in the linear region. If the ratio is too high, then the power amplifier may be operating in the linear region. By adjusting the power level of the input signal to the power amplifier when the ratio increases, linearity of the power amplifier is maintained.